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Final Report to the
Office of Naval Research
Arlington, Virginia

For Research Entitled

SEDIMENTARY DYNAMICS OF CONTINENTAL SHELVES--A SYMPOSIUM.

Covering the Period from 1 December, 1979 to 30 November, 1980

For Support in the Amount of \$6,000

Submitted By

MAR 16 1981

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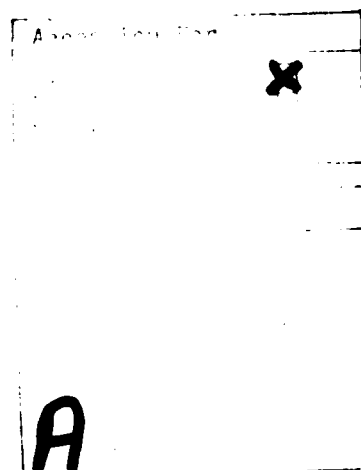
OBJECTIVES - The original request for support described the purpose of this symposium as "to document new and innovative research which expands the boundaries of ~~our~~ knowledge about shelf processes and sedimentary responses." Funds obtained from ONR were used to cover partial travel costs of 15 American participants, and to cover partial administrative costs for the symposium.

THE SYMPOSIUM - A copy of the symposium program is attached (blue sheet). Thirty-six papers were presented in five half-day sessions. Participating scientists were from laboratories around the world, and represented a range of oceanographic and geologic disciplines. The papers were divided into topical groups, with a general discussion period after each group of four presentations. Specific questions were addressed to the speakers during these periods, however, the session chairmen led open discussions during which the audience had an opportunity to integrate and synthesize the material covered by the papers.

EXPENDITURE OF ONR FUNDS - The support from ONR amounted to \$6,000. These funds were used primarily (\$4,800) to aid American participants, by covering about 25% of individuals' travel costs. Some funds (\$1,200) were used to defray administrative costs (e.g., communications with participants, printing of the program). The distribution of travel awards is shown below.

C.E. Adams - LSU	\$350
W.F. Bohlen - U. Conn.	\$350
S.R. Briggs - MIT	\$350
T.M. Chriss - OSU	\$350
J.P. Downing - UW	\$200
A.C. Hine - U. S. Fla.	\$350
P.A. Jumars - UW	\$200
S.P. Murray - LSU	\$350
C.A. Nittrouer - NCSU	\$350
A.R.M. Nowell - UW	\$200
L.J. Pietrafesa - NCSU	\$350
H.H. Roberts - LSU	\$350
W.M. Smethie - Lamont	\$350
R.W. Sternberg - UW	\$350
D.J.P. Swift - NOAA	\$350

\$4800



RESULTS - The primary results of the symposium are listed below.

- 1) The symposium was a forum in which an international group of scientists presented the results of their research and discussed ideas for future work.
- 2) It was decided that a similar session should be held at the International Sedimentological Congress (1982), and preliminary organizational plans were started.
- 3) Expanded versions of some papers will be included in a separate SANDS volume, which will be published as a special issue of Marine Geology.

Session 1
10 July 1980, Morning

- 0830 Near-bottom currents and turbulence produced by wind and waves
R.J. Lai, J. Wu
- 0850 The viscous sublayer on the continental shelf
T.M. Chies, D.R. Caldwell
- 0910 A model of a suspended sediment induced, stably stratified, oceanic bottom boundary layer
C.E. Adams, G. Weatherly
- 0930 Measurements of the Reynolds stress components close to a marine sand bank
R.L. Soulsby
- 0950 Discussion
- 1010 Break
- 1030 The role of non-uniform roughness in the formation of sand ribbons
S.R. McClean
- 1050 Tidal-current sand waves in Vineyard Sound, Massachusetts
S.R. Briggs, J.B. Southard
- 1110 Predicting sediment transport rates in tidal currents
A.D. Heathershaw
- 1130 Role sedimentologique de la merée dans les estuaries a fort marnage
J.C. Salomon, G.P. Allen
- 1150 Discussion
- 1210 Lunch

Session 2
10 July 1980, Afternoon

- 1400 Offbank transport of sands along open, leeward bank margins: northern Bahamas
A.C. Hine, R.J. Wilber, J. Bane, K. Lorenson, A.C. Neumann
- 1420 Erosion du littoral de Gascogne—notion de sédimentologie prévisionnelle
J. Lorin, C. Migniot
- 1440 Disposition, caractères et mode de formation des barres d'avant cote festonnées du littoral du Languedoc Roussillon (Golfe du Lion—France)
J.P. Barusseau, B.S.C. Saint-Guliy
- 1500 An instrumentation system for the measurement of suspended sediment flux in the nearshore environment
J.P. Downing, R.W. Sternberg, C.R.B. Lister
- 1520 Discussion
- 1540 Break
- 1600 Le modèle sédimentaire de la Manche et de ses approches occidentales
C. Larssonneur, P. Bouysse, J.P. Auffret
- 1620 Le prisme sédimentaire holocène de la Manche orientale, un exemple de bassin de détroit de merée
J.P. Auffret
- 1640 Les variations séquentielles en milieu deltaïque: Cas du Delta du Rhône
A. L'Homer
- 1700 La plateforme continentale de l'Ebre dans le cadre d'évolution récente du delta
A. Maldonado, J. Serra, F. Martrous, A. Verdaguier, J.C. Aloi, H. Got, A. Monaca, L. Mirabile
- 1720 Discussion
- 1740 End of First Day

Session 3
11 July 1980, Morning

- 0830 Dynamics of the South Atlantic Bight, USA: implications for sediment transport
L.J. Pietrafesa, G.S. Janowitz
- 0850 Dynamics of inner shelf currents—Nile delta shelf
S. P. Murray, H.H. Roberts
- 0910 Field investigations of the threshold of grain motion by open ocean waves and currents
R. W. Sternberg, L.H. Larsen, N. Shi
- 0930 Transport climatology of the central Atlantic shelf, North America
D.J.P. Swift, T.L. Clarke
- 0950 Discussion
- 1010 Break
- 1030 A Markov model of flow-sediment-organism interactions: model formulation and sensitivity analysis
P.A. Jumars, A.R.M. Nowell, R.F.L. Self
- 1050 A Markov model of flow-sediment-organism interactions: fluid mechanical and biological processes affecting the transition probabilities
A.R.M. Nowell, P.A. Jumars, J.E. Eckman, G.L. Taghon
- 1110 The use of Rh-222 as a tracer of sediment irrigation and mixing on the Washington continental shelf
W.M. Smethie, C.A. Nittrouer
- 1130 The formation of sedimentary strata in a continental shelf environment
C.A. Nittrouer, R.W. Sternberg
- 1150 Discussion
- 1210 End of Second Day

Session 4
12 July 1980, Morning

- 0830 L'estuaire de la Seine: hydrodynamique et sédimentation
J. Avoine
- 0850 Storm induced variations in suspended material concentrations in coastal waters
W.F. Bohlen
- 0910 Seston flux, provenance, pathways, and sinks in the Georgia embayment, southeastern Atlantic, United States
L.J. Doyle, P.R. Betzer, M.A. Peacock
- 0930 Processes controlling offshore transport of riverborne suspended matter in the northeast Gulf of Alaska
R.A. Feely, E.T. Baker, G.J. Massoth
- 0950 Discussion
- 1010 Break
- 1030 La dynamique sédimentaire d'une zone de grande amplitude de merée: le Minas Basin
B. Long
- 1050 Textural characteristics of sands on tide- and wave-dominated shelves
C. Jago, J.P. Barusseau
- 1110 Sur les transits sédimentaires et quelques aspects de la sédimentogénèse marine au niveau du littoral du Golfe de Tunis et de la plateforme au N et à l'E du Cap Bon
R. Mansouri, C. Bobier, S. Sassi, M. Joulrou, B. Vigneaux, P. Carboneil, J.P. Taste, M. Vigneaux
- 1130 Sand waves on the outer shelves around the Okinawa trough found by side scan sonar
S. Kubo, H. Kagami, N. Noriyuki
- 1150 Discussion
- 1210 Lunch

Session 5
12 July 1980, Afternoon

- 1400 Migration des sables et instabilité des vases au sud et au sud-ouest de la Bretagne
Y. Delanoë, J.P. Pinot
- 1420 Factors controlling shelf sediment dispersal along the southeast African continental margin
B.W. Flemming
- 1440 Estimation du volume sédimentaire théorique remanié au cours de la transgression holocène sur le proche plateau continental de Beyonne-Capbreton
F. Duplantier, J.M. Froidetond, O. Weber
- 1500 Sediment dynamics and bottom features—Nile delta shelf
H.H. Roberts, J.M. Coleman, S.P. Murray
- 1520 Discussion
- 1540 Break
- 1600 **SANDS BUSINESS MEETING**

Session Chairmen

- Session 1 R.W. Sternberg
B.W. Flemming
- Session 2 J.P. Pinot
L.J. Doyle
- Session 3 R.L. Soulsby
J.P. Barusseau
- Session 4 D.J.P. Swift
C. Larssonneur
- Session 5 A. Maldonado
C.A. Nittrouer

Purpose: The objective of this symposium is to document recent gains in knowledge about the dynamics of sedimentary particles in continental shelf environments. The range and intensity of processes which are active on shelves require multidisciplinary studies in order to fully understand the movement and accumulation of sediment. This symposium is designed to be a forum in which an international group of scientists present the results of their research and discuss ideas for future work.

Organization: The program spans a number of disciplines, includes investigations dealing specifically with the continental shelf as well as those having more general application, and considers relationships between the shelf and adjacent environments. The papers have been divided into topical groups, with a general discussion period after each group of four presentations. Specific questions can be addressed to the speakers during these periods, however, the session chairmen will lead an open discussion during which the audience will have an opportunity to integrate and synthesize the material covered by the papers.

SANDS: During 1976 SANDS was established to foster communication among scientists interested in sedimentary processes on the continental shelf. SANDS is a multidisciplinary group with over a hundred members worldwide, and has sponsored sessions at the International Sedimentological Congress and annual meetings of AGU and AAPG/SEPM. Membership in SANDS costs \$2 (US) per year, and includes a newsletter which is distributed several times each year. Further information can be obtained from the president (D.A. Cacchione, USGS Menlo Park, CA, 94025, USA) and requests for membership should be directed to the secretary-treasurer (D.W. McGrail, Dept. Oceanography, Texas A & M University, College Station, TX, 77843, USA).

Acknowledgement of Support and Assistance: This symposium has benefited from the aid of many groups and individuals. The present and past presidents of SANDS (D. A. Cacchione, and A. W. Niederoda) as well as numerous members have provided valuable input. A grant from the U. S. Office of Naval Research (Geography Programs) provided travel support for 15 participants, and helped to defray some administrative costs. Organizational guidance came from Section 8 of the International Geological Congress (M. Vigneaux, G. Boillot, and E. Seibold, conveners). Much administrative support was provided by the parent organizations of G. P. Allen and C. A. Nittrouer, Compagnie Francaise des Petroles and North Carolina State University.

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North Carolina State University
Raleigh, NC 27650 USA

SEDIMENTARY DYNAMICS OF CONTINENTAL SHELVES

a symposium

sponsored by

The SANDS Group
(Shelf and Nearshore Dynamics of Sedimentation)

U.S. Office of Naval Research
26th International Geological Congress

10-12 July 1980

at

Paris International Center
(Room 32)
Palace of Congresses

Co-convenors:

George P. Allen—Compagnie Francaise des Petroles,
Tulence, France
Charles A. Nittrouer—North Carolina State University,
Raleigh, NC USA

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